

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
27 December 2001 (27.12.2001)

PCT

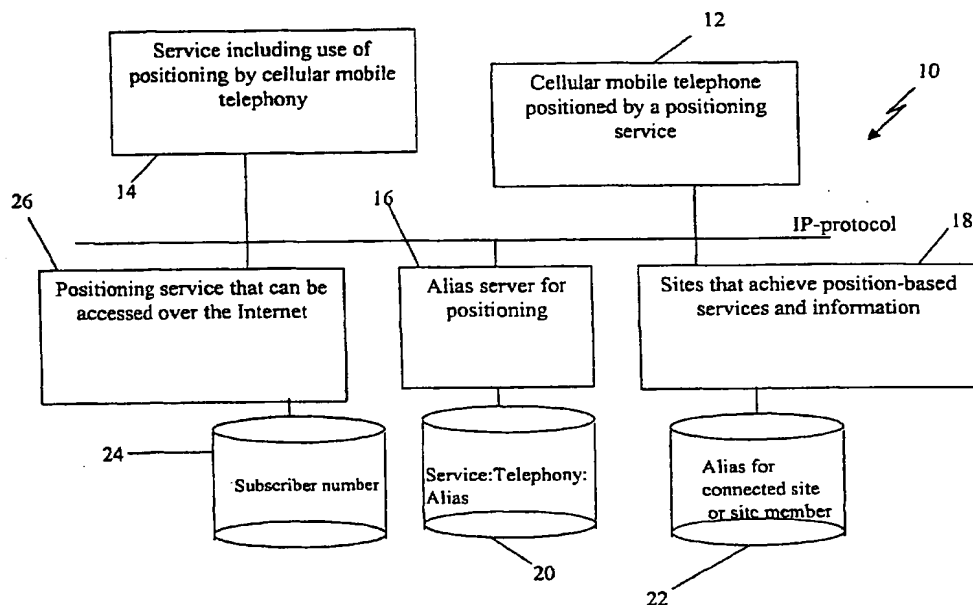
(10) International Publication Number  
**WO 01/99463 A1**

- (51) International Patent Classification<sup>7</sup>: **H04Q 7/38, H04M 3/42**
- (21) International Application Number: **PCT/SE01/01412**
- (22) International Filing Date: **20 June 2001 (20.06.2001)**
- (25) Filing Language: **Swedish**
- (26) Publication Language: **English**
- (30) Priority Data:  
**0002390-3 22 June 2000 (22.06.2000) SE**
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- (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**
- (84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**

## Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: **METHOD AND SYSTEM FOR INTEGRITY POSITIONING OF A MOBILE STATION**

(57) Abstract: The invention concerns a method and a system (10) for integrity positioning of a mobile station (12) in a communication network for mobile stations (12) and with respect to a supplier (18) of positioning services. It is a special characteristic in this case that the positioning service is hidden from the operator (14) and that the subscriber is hidden from the service provider (18) via an alias stored in an alias server (16).

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## Method and system for integrity positioning of a mobile station

### Technical Area

The present invention concerns a method and a system for integrity positioning of a mobile station in a communication network for mobile stations and with respect to a provider  
5 of a positioning service.

### The Prior Art

A few systems for positioning are currently in use and these are managed and used by telecommunications operators in order to offer services to their customers. A customer of the operator requests a function that is based on the positioning of individual or several  
10 telephones in the operator's network.

A telephone and its subscription are directly associated with a subscriber and positioning of a telephone is thus the positioning of a physical person. The right of obtaining this positioning information is critical since the integrity for the subscriber is directly coupled to the possibility of controlling who can or is allowed to see his or her position.

15 The telecommunications operators currently cannot produce position information as a part of solutions for positioning of external service providers while at the same time guaranteeing the integrity of the subscriber, unless the subscriber himself or herself requests positioning from the telephone. Such solutions introduce an extra step in the process of realising a positioning service.

### 20 Summary of the Invention

The present invention is intended to solve the problems associated with mobile positioning with respect to personal integrity for a user of a mobile station that is connected to a communications network for the same.

In order to achieve the said integrity, a method for integrity positioning of a mobile  
25 station in a communication network for mobile stations and with respect to a supplier of positioning services is specified. The method comprises the following steps:

a subscriber in the communication network connects to a homepage that offers a positioning service and that is located at the supplier of a positioning service in an open computer network;

30 the subscriber specifies the subscriber number of his or her mobile station on the homepage in order to obtain the positioning service, whereby a message with respect to the positioning service is sent to the mobile station, which message is acknowledged by the subscriber via the mobile station;

the acknowledgement is sent via the network for mobile stations to an alias server, which creates and stores an alias for the positioning of the mobile station. This alias consists of the subscriber number of the mobile station, an identity for the positioning service and an identity for the communication network operator of the subscriber; and

5           whereby the mobile station of the subscriber is positioned by use of a positioning system that the operator possesses, via the stored alias.

One embodiment of the invention specifies that a service provider can only identify the offered positioning service from the alias and that the operator can only identify the identity of the operator and the subscriber number from the alias.

10           The alias is created digitally coded in one embodiment of the present invention. Thus the operator has, in one embodiment, a code key that can only read operator and subscriber number in the alias when determining position.

The supplier has in a further embodiment a code key that can only read the positioning service in the alias.

15           Furthermore, the present invention specifies a system for integrity positioning of a mobile station in a communication network for mobile stations and with respect to the supplier of a positioning service. The system thus comprises:

20           a subscriber in a communication network who connects to a homepage that is located at the supplier of a positioning service in an open computer network who offers a positioning service;

            a homepage on which the subscriber specifies the subscriber number of his or her mobile station in order to obtain the positioning service, whereby a message with respect to the positioning service is sent to the mobile station, which message is acknowledged by the subscriber via an interface in the mobile station for communication over the network,

25           whereby an acknowledgement is sent via the network for mobile stations to an alias server;

            the alias server creates and stores an alias for the positioning of the mobile station. This alias consists of the subscriber number of the mobile station, an identity for the positioning service and an identity for the operator of the communication network for the subscriber; and

30           whereby the mobile station of the subscriber is positioned by use of a positioning system that the operator possesses, via the stored alias.

One embodiment of the present invention includes the situation in which a service provider can only identify the offered positioning service from the alias and in which the

operator can only identify the identity of the operator and the subscriber number from the alias.

In a further embodiment of the invention, the alias is created digitally coded by a coding means.

5 A further embodiment of the invention permits the operator to have a code key means that can only read operator and subscriber number in the alias when determining position.

Furthermore, one embodiment specifies that the supplier has a code key means that can only read the positioning service in the alias.

### **Brief Description of the Drawing**

10 Reference is made in the following description to the attached drawing in order to obtain a better understanding of the present invention and its embodiments and examples, whereby;

the figure illustrates schematically a system according to the present invention.

### **Detailed Description of Preferred Embodiments**

15 Responsibility for the integrity is removed from the service provider and placed on the individual subscriber by introducing the means of an alias for the identity of a subscription for a mobile station. "Mobile station" is here used to denote a device comprising mobile telephony equipment, GSM telephones and similar, and other hand-held equipment with integrated wireless telephony.

20 The figure illustrates a system 10 for integrity positioning of mobile stations 12.

Information is stored 16 centrally concerning the operator 14 and the alias to which a user of a service is connected. An alias is a unique key that defines a combination of the service and a subscriber number or a telephone number. Technology that is familiar for one skilled in the arts in this field is used for [generating] a coded key.

25 The operator 14 has access to a positioning service 26 with its associated database 24 comprising subscriber numbers connected to such a service, in this case via the Internet and its IP protocol.

In the event that a service provider 18, with the associated database 22 for registration of customers via their aliases, requests a positioning of a person 12 (subscriber, user or  
30 mobile station), the request is raised at a central function known as "Alias Server" 16 with its associated database 20 for storage of registered aliases. The service provider 18 sends a message to the relevant subscriber 12 through his or her operator 14, and asks whether it is

acceptable that the service determines his or her position according to the method and conditions that have been specified.

If the answer is positive, an alias is entered into the database 20 that describes the way in which the service 26 may determine the position of the subscriber 12.

5 From the point of view of the subscriber 12, it is simply a matter of choosing the services 18 that he or she considers should be allowed to determine the position of this particular subscription. The extent to which the subscriber wants to distribute his or her alias to allow others to determine his or her position is a decision that the subscriber takes.

The service provider 18 does not know which subscription is being positioned. The  
10 supplier exploits the alias routines on an Alias Server 16.

A user 12 of the site [www.yachtposition.com](http://www.yachtposition.com) has a subscription with Telia®, who is the operator 14. The telecommunications operator possesses the positioning system.

Users 12 desire to obtain automatically a search function for weather reports, etc., and thus request, via the site 18 for a position-based service, that their own subscription with the  
15 operator 14 is to be used for positioning. Users 12 enter their mobile telephone numbers and a message is passed to the telephone with information that the service [www.yachtposition.com](http://www.yachtposition.com) has requested positioning and the reason for this. In this case, authorisation for the execution of the positioning service can concern position-based weather, search functions for harbours and the opportunity for others within a specific group at the service yachtposition to  
20 determine the position of the particular user.

When the user 12 has answered in the affirmative by answering/transmitting a message from the telephone 12 back to the alias server 16, an alias is created that consists of the identity of the service, the number of the subscriber and the identity of the operator.

The system 10 for integrity positioning of a mobile station in a communication  
25 network for mobile stations and with respect to a supplier of positioning services can be summarised as described below. The system thus comprises:

a subscriber 12 in the communication network who connects to a homepage, portal, etc., of a supplier 18 of positioning services in an open computer network such as the Internet who offers a positioning service;

30 a homepage or a portal on which the subscriber specifies the subscriber number 24 of his or her mobile station in order to obtain the positioning service 18, whereby a message is sent to the mobile station 12 concerning the positioning service, which message is acknowledged by the subscriber 12 via an interface in the mobile station 12 for

communication over a network, whereby an acknowledgement is sent via the network for mobile stations 14 to an alias server 16;

the alias server 16 creates and stores an alias for positioning of the mobile station 12, which alias consists of the subscriber number 24 of the mobile station, the identity of the positioning service and an identity of the operator of the subscriber's communication network; and

whereby the mobile station 12 of the subscriber is positioned through a positioning system that the operator 16 possesses and for which the subscriber is registered in the database 24, via the stored alias, for the acknowledged positioning service. The service provider 18 initiates positioning with respect to the positioning service 26 according to the alias. The operator 14 identifies the subscriber number and the correct operator identity in the alias. The operator 14 subsequently checks that the subscriber is registered for positioning in the database 24, and performs positioning if this is the case.

It is a special characteristic in this case that the positioning service is hidden from the operator 14 and that the subscriber 12 is also hidden from the service provider 18 via an alias stored in an alias server 16.

The present invention has been described here using examples and embodiments, but it is the attached claims that define further embodiments for one skilled in the arts in this technical area.

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### Claims

1. A method for integrity positioning of a mobile station (12) in a communication network for mobile stations and with respect to a supplier (18) of positioning services **c h a r a c t e r i s e d** in that it comprises the following steps:

5 a subscriber in a communication network connects to a homepage of a supplier (18) of positioning services in an open computer network who offers a positioning service (18);

the subscriber specifies the subscriber number of his or her mobile station (12) on the homepage in order to obtain the positioning service (18), whereby a message is sent to the mobile station (12) with respect to the positioning service (18), which message is  
10 acknowledged by the subscriber via the mobile station (12);

the acknowledgement is sent via the network to an alias server (16), which creates and stores an alias of positioning of the mobile station (12), which alias consists of the subscriber number of the mobile station, the identity of the positioning service and an identity of the operator (14) of the communication network; and

15 whereby the position of the mobile station of the subscriber is determined by a positioning system (26) that the operator (14) possesses, via the stored alias.

2. The method according to claim 1, **c h a r a c t e r i s e d** in that the service provider (18) can only identify the positioning service offered from the alias and that the operator (14) can only identify the identity of the operator and the subscriber number from  
20 the alias.

3. The method according to claim 1 or 2, **c h a r a c t e r i s e d** in that the alias is created digitally coded.

4. The method according to claim 3, **c h a r a c t e r i s e d** in that the operator (14) possesses a code key that can only read operator and subscriber number in the alias when  
25 positioning is carried out.

5. The method according to claim 3 or 4, **c h a r a c t e r i s e d** in that the supplier possesses a code key that can only read the positioning service in the alias.

6. A system (10) for integrity positioning of a mobile station (12) in a communication network for mobile stations and with respect to a supplier of positioning services (18),  
30 **c h a r a c t e r i s e d** in that it comprises:

a subscriber in a communication network who connects to a homepage of a supplier (18) of positioning services in an open computer network who offers a positioning service (18);



a homepage on which the subscriber specifies the subscriber number of his or her mobile station (12) in order to obtain the positioning service, whereby a message is sent to the mobile station with respect to the positioning service, which message is acknowledged by the subscriber via an interface on the mobile station for communication over the network,  
5 whereby an acknowledgement is sent via the network for mobile stations to an alias server (16);

the alias server (16) creates and stores an alias for positioning of the mobile station (12), which alias consists of the subscriber number of the mobile station, the identity of the positioning service and an identity of the operator of the communication network; and  
10 whereby the position of the mobile station of the subscriber is determined by a positioning system that the operator possesses, via the stored alias.

7. A system according to claim 6, **c h a r a c t e r i s e d** in that the service provider (18) can only identify the offered positioning service from the alias and that the operator can only identify the identity of the operator and the subscriber number from the  
15 alias.

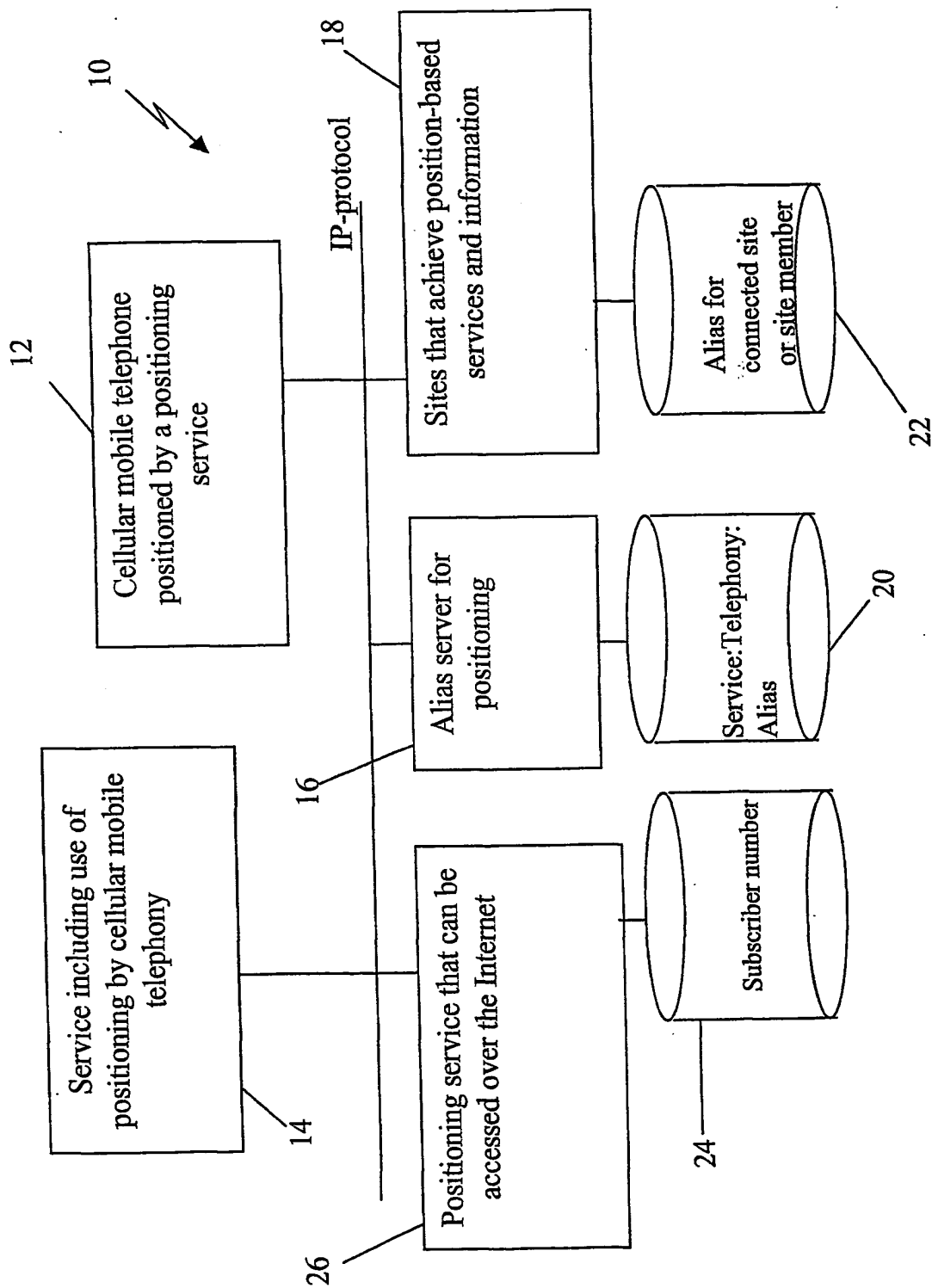
8. A system according to claim 6 or 7, **c h a r a c t e r i s e d** in that the alias is created digitally coded by coding means.

9. A system according to claim 8, **c h a r a c t e r i s e d** in that the operator (14) possesses code key means that can only read operator and subscriber number in the alias  
20 when positioning is carried out.

10. A system according to claim 8 or 9, **c h a r a c t e r i s e d** in that the supplier (18) possesses code key means that can only read the positioning service in the alias.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/01412

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/38, H04M 3/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q, H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9852379 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 19 November 1998 (19.11.98), page 3, line 18 - page 7, line 19, figures 1,6	1,3,6,8
A	---	2,4-5,7,9-10
A	DE 3827352 A1 (ROBERT BOSCH GMBH), 15 February 1990 (15.02.90), abstract	1,6
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☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

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Date of the actual completion of the international search

Date of mailing of the international search report

25 October 2001

26 -10- 2001

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

01/10/01

International application No.

PCT/SE 01/01412

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
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